ABSTRACT

A radiation detector including a chamber capable of being filled with an ionizable and scintillating substance, and a radiation entrance arranged such that radiation can enter said chamber partly for ionizing said ionizable and scintillating substance, partly for being converted into light therein, is disclosed. The detector further includes a light detector for detection of said light, and an electron avalanche detector for avalanche amplification and detection of electrons released as a result of the ionization. Further, there are provided means for correlating detected light and detected electrons, which are derivable from a single radiation photon; and means for producing a signal from the correlated detected light and detected electrons. The detector is particularly suitable for positron emission tomography (PET).

(Fig. 3 suggested for publication)